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WHAT IS CLAIMED IS:

1. An optical function module for bi-directional wavelength-division multiplexer (WDM) optical communication system, comprising:

at least one wavelength managing module having a plurality of ports, the wavelength managing module optically coupling between a first optical transceiver and a second optical transceiver, wherein the first and the second optical transceivers provide a first and a second optical channels respectively for transmitting a plurality of optical signals with different wavelengths; and

at least one uni-directional optical function module having a high isolation function, and coupling to the ports of the wavelength managing module.

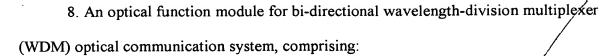
- 2. The optical function module of claim 1, wherein the uni-directional optical function module having a high isolation function is an optical amplifier module, and couples to the ports of the wavelength managing module.
- 3 The optical function module of claim 1, wherein the uni-directional optical function module having a high isolation function is a chromatic dispersion compensator coupling to the ports of the wavelength managing module.
 - 4. The optical function module of claim 3, wherein the chromatic dispersion compensator further comprises an optical circulator and an optical fiber grating.
- 5. The optical function module of claim 4, wherein the optical circulator of the optical dispersion compensator is a three-port circulator.
 - 6. The optical function module of claim 4, wherein the optical circulator of the optical dispersion compensator is a six-port circulator.
 - 7. The optical function module of claim 1, wherein the wavelength managing module is a multi-window wavelength-division multiplexer (MWDM).

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at least one wavelength managing module having a plurality of ports, the wavelength managing module optically coupling between a first optical transceiver and a second optical transceiver, wherein the first and the second optical transceivers provides a first and a second optical channels respectively for transmitting a plurality of optical signals with different wavelengths;

at least one uni-directional optical function module coupling to the ports of the wavelength managing module, and

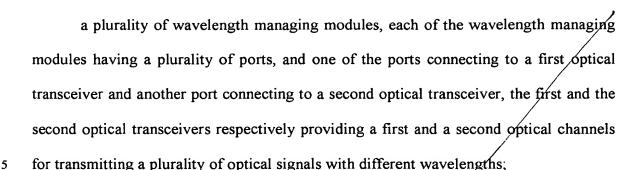
at least one optical isolator optically coupled between the wavelength managing module and the uni-directional optical function module.

- 9. The optical function module for bi-directional wavelength-division multiplexer (WDM) optical communication system of claim 8, wherein the uni-directional optical function module comprises at least one optical add/drop module coupling to the ports of the wavelength/managing module.
- 10. The optical function module for bi-directional wavelength-division multiplexer (WDM) optical communication system of claim 8, wherein the uni-directional optical function module comprises at least one uni-directional optical crossconnect coupling to the ports of the wavelength managing module.
- 11. The optical function module for bi-directional wavelength-division multiplexer (WDM) optical communication system of claim 8, wherein the wavelength managing module comprises a multi-window wave-division multiplexer (MWDM).
- 12. A bi-directional wavelength multiplexer optical communication system, for automatically switching optical signals, comprising:

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at least one uni-directional wavelength crossconnect optically connecting between the ports of the wavelength managing modules; and

a plurality of optical isolators, each of the optical isolators optically connecting between the uni-directional optical crossconnect and each of the wavelength managing modules.

- 13. The bi-directional wavelength multiplexer optical communication system of claim 12, wherein each of the wavelength managing modules comprises at least one multi-window wave-division multiplexer (MWDM).
- 14. The bi-directional wavelength multiplexer optical communication system of claim 12, wherein the number of the wavelength managing modules is consistent with the number of input optical transmission paths of the bi-directional wavelength multiplexer optical communication system.
- 15. The bi-directional wavelength multiplexer optical communication system of claim 12 wherein the number of the optical isolators is consistent with the number of input optical transmission paths of the bi-directional wavelength multiplexer optical communication system.